

PARASITES OF WESTERN AUSTRALIA

I

HYPOPI OF THE FAMILY HYPODERIDAE MURRAY, 1877

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ABSTRACT

Two new species of heteromorph deutonymphs (hypopi) from Australian hosts (living under the skin of birds) are described and figured. For the first species collected from a caprimulgiform bird a new genus *Caprimuldectes* has been erected.

INTRODUCTION

Hypopi of family Hypoderidae live in the connective tissues under the skin of birds. During the breeding period hypopi leave their hosts and molt in the nest directly to adults. From the eggs free hypopi emerge and penetrate the soft skin of nestlings. In the connective tissue under the skin and around the trachea and oesophagus (and in strongly parasitized birds also around the lungs and heart), hypopi gorge an increase much in size although their mouthparts and mouthopenings are absent. Free hypopi and tissue hypopi have the same sclerotized parts such as legs, setae and shields. They differ however, in leg to body proportions. The life cycle is shortened by suppression of the larval, protonymphal and tritonymphal stages. Development is closely related to the generation cycle of the hosts. Hormonal changes in the hosts seem to be important (Fain 1967). Observations of hosts in zoological gardens indicate that infection by large numbers of mites results in serious illness or death. Representatives of the family are not yet

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recorded from Western Australia. Remarks are given below on the hypopi collected in three birds by one of us (F.S.L.) during the Western Australia Field Program 1976.

1 *Hypodectes (Hypodectoides) propus bubulci* Fain, 1967¹

The subspecies was first described from *Bubulcus ibis* by Fain and Hyland 1962. Specimens were found in *Ardea herodias cognata* from the Galapagos Islands and in *Tantalus leucocephalus* which died in the zoological garden at Vienna (Fain 1967). Cerny (1969) found them in *Ardeola ibis* and *Florida caerulea* from Cuba. All the above hosts belong to the Ciconiiformes.

We found larger numbers of hypopi in *Egretta garzetta* (Ardeidae: Ciconiiformes), Napier Downs, 3 September 1976, Lukoschus leg.

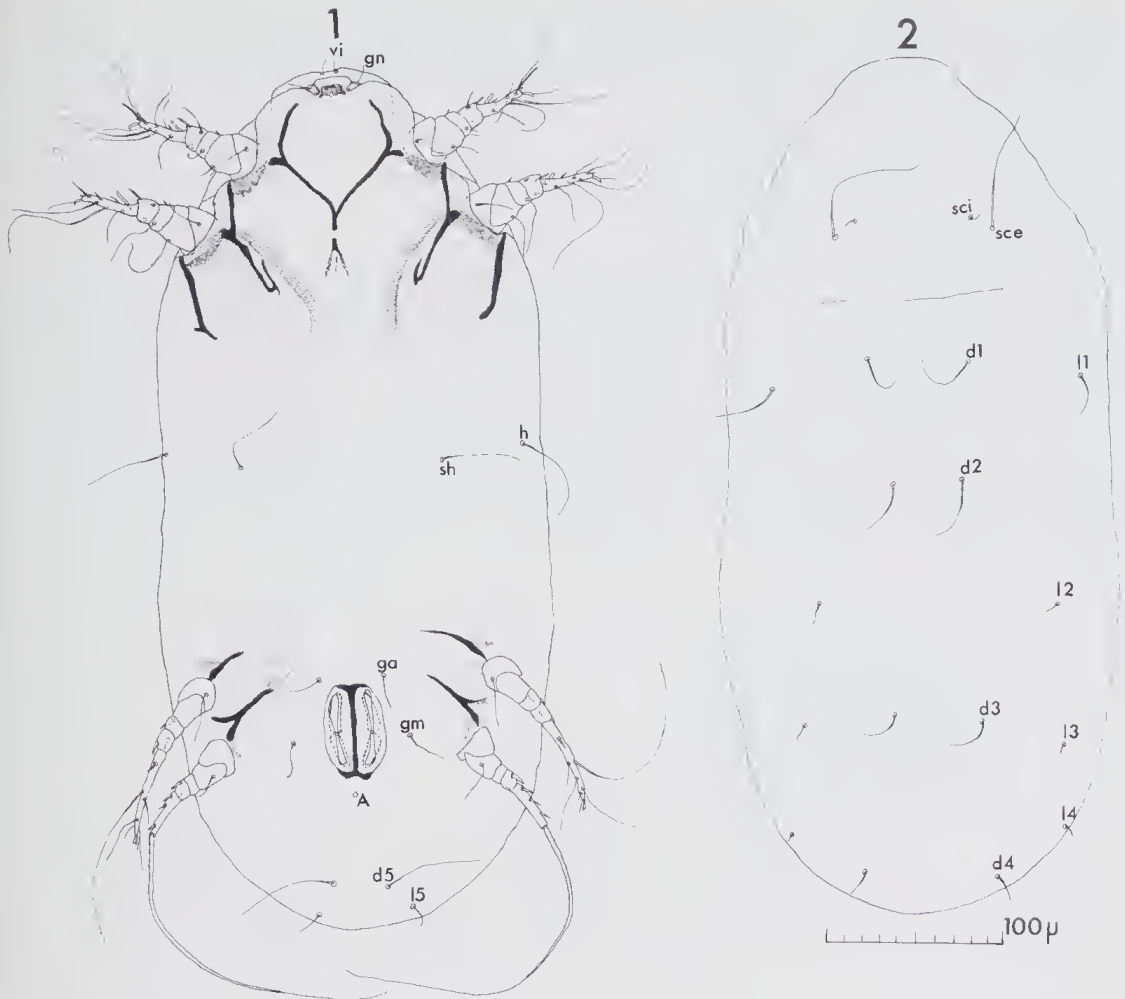
2 *Neottialges (Pelecanectes) grallinae* sp. nov.

With the characteristics of genus *Neottialges* Fain, 1966 and of subgenus *Pelecanectes* Fain, 1966. Known only from the hypopial stage. Hypopi of median size, white to pale yellow. Length holotype 499 μ , average 576 μ in 10 paratypes measured (437-665), width 219 μ , average in paratypes 243 (209-285).

Venter holotype (Fig. 1): Epimera I fused in Y-shape with bifid sternum, epimera II-IV free. Epimera and epimerite II of about same length. Formation of new epimera I and II in old hypopi distinct though feeble. Secondary sclerotization occurs in coxal fields II and III and partly in coxal region IV, and in some paratypes also between epimera I and the gnathosoma. Gnathosomatal shield with well marked anterior border. Gnathosomatal setae, 19 μ . Genital region with two pairs of parallel lying 20-23 μ long genital suckers and 52 μ long genital sclerite. Small anal pore (A) behind genital sclerite without sclerotized surrounding. Idiosomatal setae on ventral surface: *vi* (12 μ), *sh* (49), *h* (51), *ga* (20), *gm* (20), *d5* (71) and *l5* (14).

Dorsum (Fig. 2): Cuticle in some paratypes in opisthosomatal part slightly sclerotized without distinct pattern. Sejugal furrow present only in median part. Setae of dorsum setiform and thin: *sci* (12), *sc e* (75), *d1* (39), *d2* (41), *d3* (29), *d4* (16), *l1* (37), *l2* (10), *l3* (5), *l4* (4).

¹ Dr R. Domrow, Brisbane, has since sent us 6 hypopi of this subspecies from 'breast muscle' of another new host, the white egret, *E. alba* (L.), Victoria, VIII.1977, J.H. Arundel. The smallest specimens (body length 800-900 μ) are intermediate between Fig. 18-19 of Fain (1967), lacking epimera II, and with neopimera II extending down midline one-half to two-thirds of distance to epimerites II. The largest specimen (body length 1300 μ) is intermediate between Fig. 19-20, with neopimera II touching on epimerites II, and with weak cross-bar between sternum and neopimera II.



Figs 1-2: *Neottialges (Pelecanectes) grillinae* sp. nov., holotype venter (1) and dorsum (2).

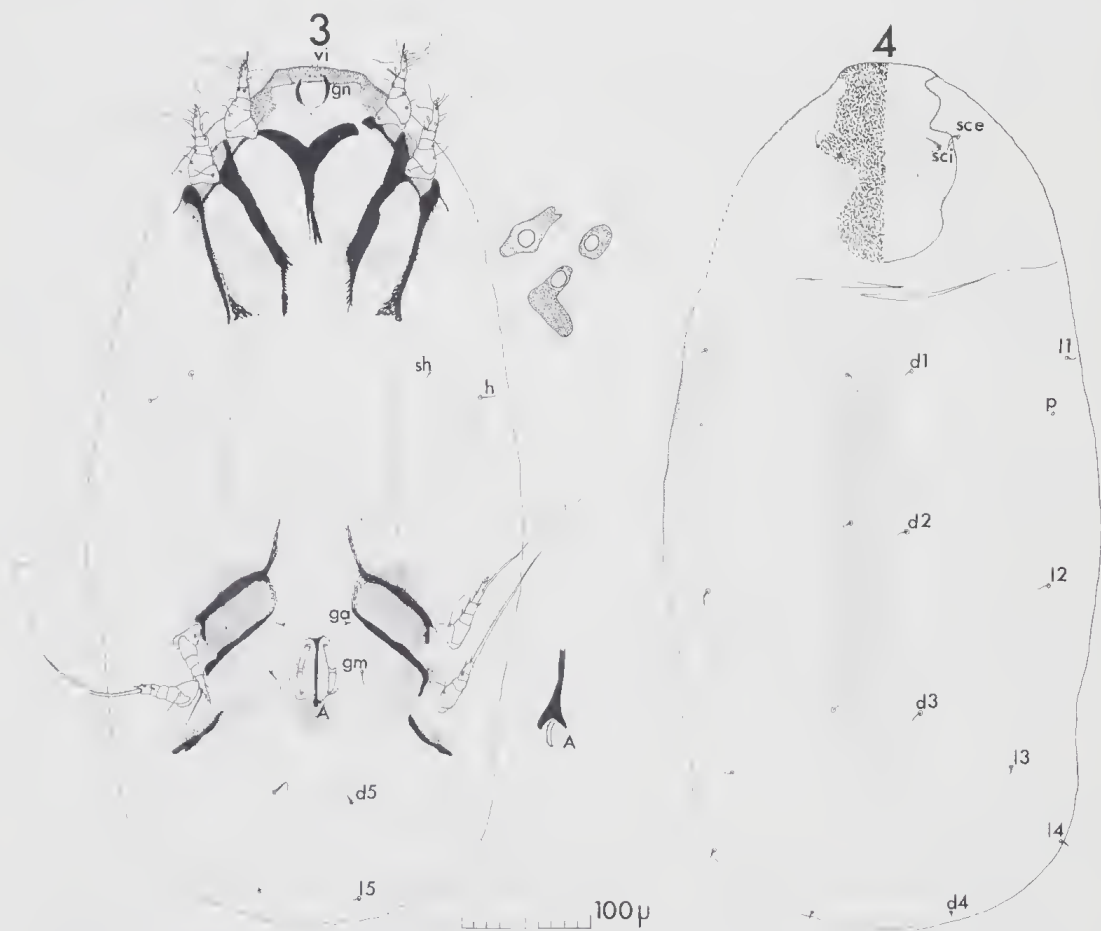
Legs (Figs 5-7): The five free segments without pretarsi and claws. All tarsi long (26, 29, 49, 32). Tarsi I and II with clawlike curved apical spine (8), tarsus III with 6μ long bifid spine, tarsus IV with 181μ long barbed strong seta. Chaetotaxy of legs: tarsi 10-10-9-4, tibiae 2-2-1-1, genua 2-2-1-0, femora 1-1-0-1, trochanters 1-1-1-0. Shape of setae as shown in the figures. Both setae on tibia II are spinelike (Fig. 5A). Solenidiotaxy: tarsi 2-1-0-0, tibiae 1-1-1-1, genua 1-1-1-0. *Omega* 1 10, *omega* 3 21, *omega* II 14, *phi* I-IV remarkable thin and tapering to end (14, 13, 10, 3).

Host and locality: *Grallina cyanoleuca* (Latham) (Grallinidae: Passeriformes), Napier Downs, 29 August 1976, Lukoschus leg.

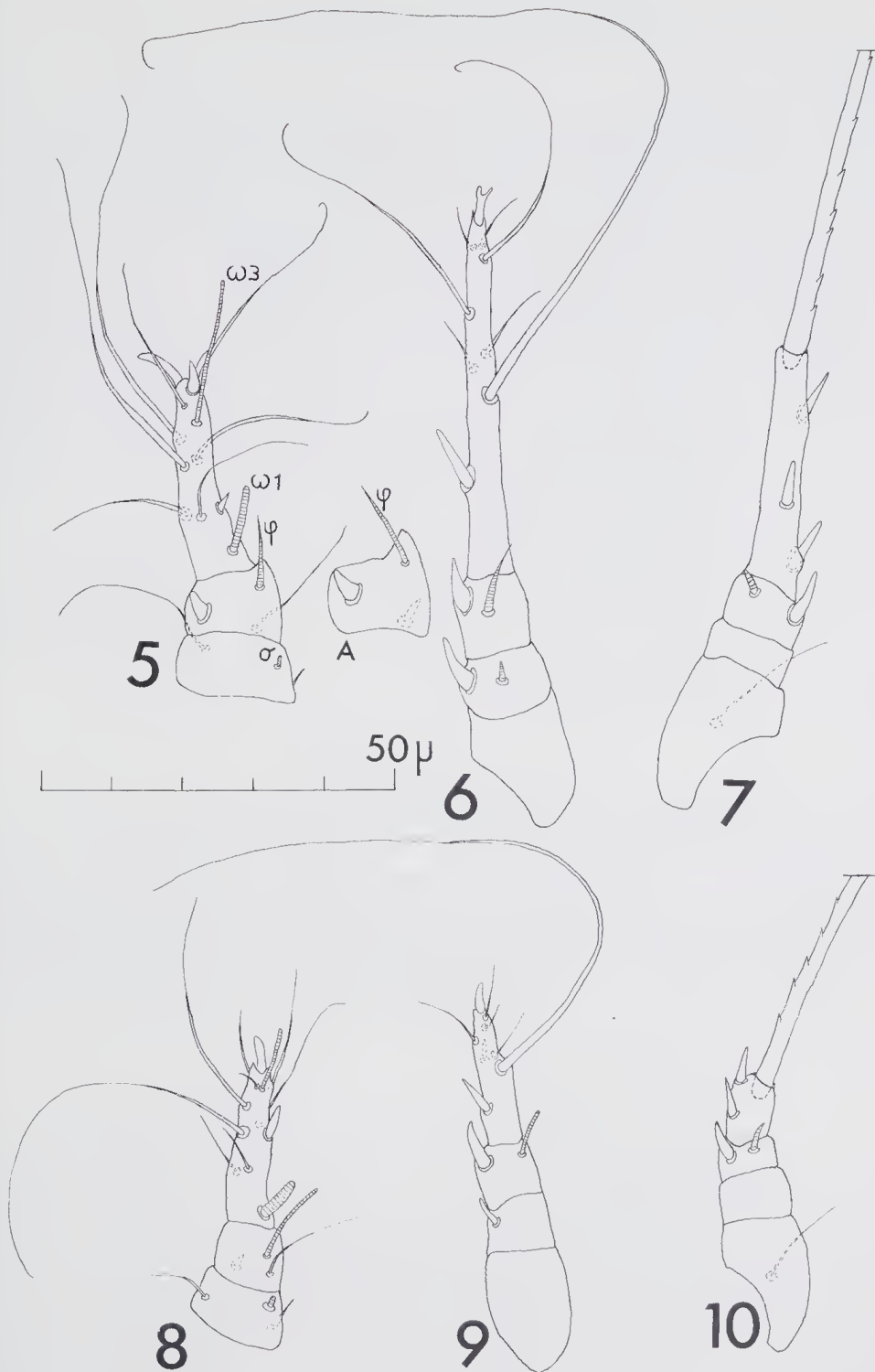
Deposition of types: Holotype in Western Australian Museum, Perth. Paratypes (50) in Perth; Field Museum of Natural History, Chicago; U.S.

National Museum of Natural History, Washington, D.C.; The Acarology Laboratory, Columbus, Ohio; British Museum (Natural History), London; Muséum National d'Histoire Naturelle, Paris; Institute of Parasitology, Prague; Zoologisches Museum Hamburg; Forschungsinstitut Senckenberg, Frankfurt; Bernice P. Bishop Museum, Honolulu; Institut de Médecine Tropicale Prince Léopold, Antwerp; Zoologisch Laboratorium, Nijmegen.

Hypopi collected from *Podargus strigoides* do not fit the definitions of known genera because of a combination of characteristics, viz. all idiosomatal setae short, short tarsus IV with barbed seta, presence of genital sclerite with anal pore in bifurcate end of sclerite, lateral gnathosomatal sclerites not fused with epimera I, fairly strong sclerotization of median part of propodosoma, elongate internal sclerotizations beneath sternum and epimera II, and absence of *sigma* III. We erect the following new genus for the first species found in a caprimulgiform bird.



Figs 3-4: *Caprimuldedectes podargi* gen. and sp. nov., holotype venter (3) and dorsum (4).



Figs 5-10: Legs I, III and IV of *Neottialges (Pelecanectes) grallinae* sp. nov. (5-7) and of *Caprimuldectes podargi* gen. and sp. nov. (8-10). A = tibia of leg II.

CAPRIMULDECTES GEN. NOV.

Definition

Median sized hypopi with relatively strong sclerotization. Forming of new epimerae in old hypopi not restricted to regions of epimera I and II and epimerite II, but also present in epimera III and epimerite IV. Lateral gnathosomatal sclerites fused in V-shape, not connected with epimera I. Idiosomatal setae short. Tarsus IV short, with two spines and long barbed seta. Apical spines of tarsi I-III simple, short and only slightly curved. Genital region with almost parallel lying genital suckers, genital sclerite and anal pore in posterior bifid end of sclerite. Punctated sclerotization median on propodosoma. Three internal sclerites present beneath sternum and epimera II. *Sigma* III absent. Chaetotaxy: tarsi 10-10-8-3, tibiae 2-2-1-1, genua 2-2-1-0, femora 1-1-0-1, trochanters 1-1-1-0. Solenidiotaxy: tarsi 2-1-0-0, tibiae 1-1-1-1, genua 1-1-0-0.

Type species: *Caprimuldectes podargi* sp. nov.

The genus is related to *Tytodectes* Fain, 1966. Main differences are: absence of basically flattened setae on tarsi I-III, apical spines on legs I and II one-pointed and gnathosomatal sclerites fused in V-shape.

CAPRIMULDECTES PODARGI SP. NOV.

Hypopus (holotype) of long-ovoid shape of medium size with white to pale yellow colour with yellow legs, and brown epimera, epimerites and anterior part of dorsum. With the characteristics of the genus mentioned above. Length 675 μ , average 687 μ , in 10 paratypes measured (589-760), width 303 μ , average in paratypes 352 (285-380).

Venter (Fig. 3): Cranial part blunt and strongly sclerotized. Epimera I fused in broad Y-shape, epimera II-IV free. Epimera and epimerite II of same length. Secondary prolongations of epimera I-III and epimerites II and IV. Coxal fields I-IV more punctated and sclerotized than other parts of venter. Lateral gnathosomatal sclerites (gn) fused in broad V-shape without connection to epimera I. Gnathosomatal setae (11) lateral to those sclerites. Internal sclerites with central hollow of dumb-bell shape beneath sternum and epimera II. Genital region with 55 μ long genital sclerite, bifid on both sides, two pairs of genital suckers (17-20) lying almost parallel, and anal pore in posterior bifurcation of sclerite. Idiosomatal setae on venter: *vi* (2), *sh* (16), *h* (11), *ga* (13), *gm* (13), *d* 5 (15) and *l* 5 (5).

Dorsum (Fig. 4): Median part of propodosoma densely punctured and relatively strongly sclerotized. Sejugal furrow in transverse band of soft cuticle. Histerosoma with punctured median part with typical pattern in front of *d* 2 and less sclerotized and punctured sides. Dorsal setae short: *sc i* (6), *sc e* (12), *d 1-4* (4-5), *ℓ 1* (7), *ℓ 2* (7), *ℓ 3* (6), *ℓ 4* (4).

Legs (Figs 8-10) with the five free segments without pretarsi and claws. Tarsi I-III with short (4-5) simple, slightly bent spine, tarsus IV with 159 μ long barbed strong seta. Tarsi I-IV 18, 23, 20, 10 μ long. Chaetotaxy and solenidiotaxy as defined for genus. 102 μ long seta based in median part of tarsus III. Solenidia *omega* 1 (7), *omega* 3 (11), *omega II* (7), *phi* I-IV (11, 11, 6, 3), *sigma* I and II (2, 2).

Host and locality: *Podargus strigoides* (Latham) (Caprimulgidae: Caprimulgiformes), Beagle Bay, 24 August 1976, Lukoschus leg.

Deposition of types: Holotype in WAM, Perth. Paratypes (52) in Perth, Chicago, Washington, Columbus, London, Paris, Prague, Hamburg, Frankfurt, Antwerp, Nijmegen.

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